

CENTRAL INTELLIGENCE AGENCY

PROPOSED OFFICE BUILDING

N-182

LANGLEY, VIRGINIA

OUTLINE SPECIFICATIONS

for

VERTICAL AND HORIZONTAL CONVEYOR WORK

JANUARY 31, 1958

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Job #N-182  
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OUTLINE SPECIFICATIONS

for

VERTICAL AND HORIZONTAL CONVEYOR WORK

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## OUTLINE SPECIFICATIONS

for

### VERTICAL AND HORIZONTAL CONVEYOR WORK

#### 1. SCOPE OF WORK

All required labor, materials, equipment, and Contractor's services necessary for complete installation of Vertical and Horizontal Conveyor Work in full conformity with requirements of all Authorities having jurisdiction; all as indicated on drawings and/or herein specified.

#### 2. DESCRIPTION OF WORK

a. Constant speed conveyor system shall be installed, consisting of 5 vertical selective conveyors connected by two-way horizontal belt conveyors with automatic transfer between the two types of conveyors. See drawings for designation and location of various conveyors and stations.

b. Tote box shall be capable of being dispatched from any one station to any one of the other stations in system and shall do so automatically without further resetting and without passing through any of the vertical conveyors other than the one it leaves and the one having the station designated to receive it.

c. Method of station selection shall be a series of movable pins inserted on one side of tote box to be set in combination to actuate contact points at selected station of vertical conveyors and at various transfer points in horizontal belt conveyor system.

d. Station No. 1, located in Mail Room as indicated on drawings, shall be main station of system. At this station, in normal operation, all conveyors, except vertical #2 Core A and vertical #5 at Core C, are to be started and stopped. A bank of running lights, one for each drive unit in system, indicating which conveyors are in operation, shall be located at this station.

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e. Vertical conveyors at #2 Core A and #5 Core C, each having 8 stations, shall be capable of running independently of the rest of system. Each conveyor to have one main station at which shall be located start and stop controls and an annunciator for that system. Boxes shall not unload at tunnel transfer station when belts are not in operation.

f. Experimental systems will not be considered. System shall be a standard proven product.

g. Upon completion of work, submit *to Archt* ~~(to Architect)~~ complete instructions covering operation and maintenance of system.

### 3. APPLICABLE SPECIFICATIONS

Following specifications and standards form part of these specifications:

#### a. Federal Specifications:

- CC-M-636. Motors; Alternating-Current, Fractional-Horsepower, Single-Phase and Universal.
- CC-M-641. Motors; Alternating-Current, Integral-Horsepower.
- QQ-A-596. Aluminum-Base-Alloy; Permanent-Mold-Castings.
- QQ-B-691. Bronze; Castings.
- QQ-I-716. Iron and Steel; Sheet, Zinc-Coated (Galvanized).
- QQ-S-741. Steel, Structural (including Welding) and Rivet; (for) Bridges and Buildings.
- QQ-S-766. Steel, Corrosion-Resisting, Plates, Sheet Strips and Structural Shapes.
- TT-P-86. Paint, Red-Lead-Base; Linseed-Oil, Ready-Mixed.
- TT-P-636. Primer, Paint; Synthetic (for Ferrous Metal and Wood Surfaces).

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b. Underwriters' Laboratories, Inc.:

Standard for Industrial Control Equipment.

c. National Electrical Manufacturers Association:

Industrial Control Standards.

4. APPROVAL OF MATERIALS AND EQUIPMENT

As soon as practicable within 60 days after award of contract and before commencement of installation of any materials or equipment, a complete schedule of materials and equipment proposed for installation shall be submitted for approval of Architect. Schedule shall include catalogs, cuts, diagrams, drawings, and such other descriptive data as may be required by Architect. No consideration will be given to partial lists submitted from time to time. Any scheduled materials, fixtures, and equipment not conforming to specifications may be rejected. Product of any reputable manufacturer regularly engaged in commercial production of conveyor systems will not be excluded on basis of minor differences, provided all essential requirements of these specifications relative to materials, capacity, and performance are met. Contractor shall submit statement giving complete description of all points wherein equipment he proposes to furnish does not comply with specifications, as well as any exceptions he may take to specifications. Failure to submit such statement will be interpreted to mean that equipment meets all requirements of specifications.

5. SHOP DRAWINGS

Submit shop drawings to Architect for approval, in accordance with General Conditions. Shop drawings shall show plans, details of construction, materials, gauges of metal, hardware, fittings, control system, and wiring diagram.

6. MATERIALS

- a. Aluminum Castings: Fed Spec QQ-A-596, class No.2.
- b. Bronze Castings: Fed Spec QQ-B-691, Composition No. 2.
- c. Corrosion-Resisting Sheet Steel: Fed Spec QQ-S-766, class 1, finish No. 7.
- d. Galvanized Sheet Steel: Fed Spec QQ-I-716, class of

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coating best suited for purpose, and shall be copper bearing when so specified.

e. Structural Steel: Fed Spec QQ-S-741, type I, grade B, class 1, or ASTM, A7-52T.

7. CONVEYOR SYSTEM

a. Location: Vertical selective conveyors shall be installed as indicated on drawings. Horizontal conveyors shall be installed in tunnel provided and in accordance with drawings.

b. Operation:

(1) A tray shall be capable of being dispatched from any one station to any one of the other stations and it shall reach the station automatically without further resetting. Non-interference devices shall be provided to prevent piling up or jamming of trays at any point. A tray not properly dispatched shall automatically travel to #1 Mail Room station, which shall act as a "reject" station and central.

(2) Furnish control devices that will sound warnings when jams occur and stop conveyor, if necessary, to prevent damage to machinery or transported materials.

(3) Design of conveyor and its stations must be such that the minimum hazard is presented to operating personnel at all times.

(4) Vertical conveyor shall dispatch trays at minimum rate of 8 per minute. Horizontal conveyor shall operate at speed of approximately 100 feet-per-minute.

c. Control System:

(1) Control system shall operate conveyor as specified herein, and shall be fully automatic electrically operated system. Simplicity of operation and maintenance is of importance. Each vertical and horizontal system component shall be capable of independent operation and control in order to permit partial operation.

(2) Submit with bid description of control system and sequence of operations involved, including cuts, drawings, diagrams and other descriptive data in sufficient detail, to ac-

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quaint Architect with control system intended for this work.

d. Stations: Receiving stations on vertical conveyors shall accommodate not less than three trays, and be equipped with an auditory warning signal and lamp to indicate when rack is loaded. System shall be so designed that should a receiving station designated to receive a tray be full, tray shall travel along conveyor system until space at designated station is available. Receiving stations shall be so designed to prevent unauthorized removal of trays not designated for that station. A device shall be provided to prevent dispatching of any tray from which materials project beyond clearances shown on drawings, in such manner as to cause jamming with supports or piping during travel of tray.

e. Trays: Trays shall be not less than 16-15/16 in. x 20-7/16 in. at top, 14-3/4 in. x 18-1/4 in. at bottom and 10-1/8 in. deep. Trays shall carry up to 30 lbs. of material. Trays to be molded of fiber glass, and of substantial construction with reinforced corners and edges so as to withstand all normal usage. A rigid cover of same material to be provided with spring clips to hold it in position and prevent rattling. A pocket shall be provided on end of tray to hold 4 in. x 6 in. card. Weight of tray, cover and attachments shall not exceed 12-1/2 lbs. Trays to nest. 500 trays shall be provided.

f. Construction:

(1) All moving parts to be rigidly supported with steel framework. Chains, bearings, rollers, etc., to be readily accessible for inspection, lubrication and maintenance. Mechanical drives shall be equipped with anti-friction bearings, and provisions made for their re-lubrication with pressure grease guns.

(2) Rollers supporting conveyor belts shall be 2-1/4 in. in diameter and shall have grease-packed ball bearings and shall be spaced not greater than 8 in. center to center. Roller wheels on gravity sections shall have rubber tires to minimize noise and bearings of such construction as to eliminate necessity of lubrication.

(3) Belts shall be 4 ply, 39 oz., wax impregnated canvas except as noted below. Short conveyors to have 3 ply, 32 oz. wax impregnated canvas. Short inclined conveyors to have rubber rough top belt, 3 ply, 28 oz. canvas, friction surface bottom cover, 2-3/32 in. top cover.

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(4) Pulleys: Diameter of drive pulleys and idler pulleys of conveyor belts shall be not less than diameter recommended by belt manufacturer.

(5) Horizontal conveyors shall be equipped with automatic tension take-up to compensate for variation in belt. Short conveyors to be equipped with screw take-ups.

(6) Sprocket wheels of vertical conveyors shall be not less than 26-inch pitch diameter.

(7) Chain shall be made entirely of steel, having steel pins and bushings and having breaking strength of not less than 18,000 lbs.

(8) Vertical conveyors shall be equipped with take-ups to compensate for chain wear.

(9) All openings or ports in enclosures used for operation of conveyors shall be equipped with automatic metal fire doors, bearing Underwriters' Class B label and equipped with fusible links.

(10) Each station shall have an emergency stop.

(11) Motor drives are to be mounted wherever possible on resilient sound-absorbing material. Special attention in design is to be given to reducing noise.

(12) Guarding: Belts, gears, chains, pulleys, projecting set screws, keys and other rotating or reciprocating parts exposed to hazardous contact shall be fully enclosed or properly guarded.

(13) Provide for lubrication of all moving parts.

## 8. PAINTING

Machinery shall be given shop priming coat of machinery enamel undercoater conforming to Fed Spec TT-P-636. Ferrous metal work, frame, supports, etc., shall be given a shop priming coat of red-lead-base paint conforming to Fed Spec TT-P-86. Finish painting of exposed machinery and other exposed ferrous metal is not included in this section of the specifications, but will be performed under specifications for General Construction.



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## 9. ELECTRICAL WORK

All electrical control, signal, and protective devices, required for operation of equipment herein specified, shall be furnished, installed, and connected to electric service under these specifications. Installation and connections shall be in conformance with requirements of specifications for Electrical Work, under which above-mentioned electric service will be furnished and installed, in immediate vicinity of equipment required under these specifications.

## 10. MOTORS

a. Electrical motors shall be suitable for operation on 440 volt, 60 cycle, 3 phase, alternating current. Motors shall conform to Fed Spec CC-M-636 or CC-M-641, and shall be designed for continuous operation in 40°C ambient temperature. Poly-phase motors shall be class B, squirrel-cage type, having normal-starting torque and low-starting-current characteristics.

b. Motor: Horsepower of all motors shall be selected to handle adequately the loads involved without overload.

## 11. MOTOR CONTROLS

Each motor shall be furnished with starter conforming to Underwriters' Laboratories, Inc., Standard for Industrial Control Equipment and to the adopted and recommended standards of the NEMA Industrial Control Standards. Starters shall be provided with manual-reset thermal overload protection. A separate pole shall be provided for each ungrounded conductor. Magnetically operated reduced-voltage starters shall have application of full voltage controlled by a definite-time-delay relay. Auto-transformers or resistances shall be furnished with two or more reduced-voltage taps.

## 12. TESTS

After mechanical conveyor systems are completed, and at such time as Architect may direct, Contractor shall conduct an operating test of the system for approval. Equipment shall be demonstrated to operate in accordance with requirements of these specifications. Tests shall be performed in presence of Architect or his authorized representatives. Contractor shall furnish all instruments and personnel required for tests, and Contractor shall furnish the necessary power.

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a. Each station shall be tested by dispatching therefrom a tray, carrying the maximum specified load, to each of the other stations in system. Elapsed time for delivery between stations shall be measured, and average velocity computed. Average velocity shall be not less than 80 feet-per-minute.

b. Conveyor System shall be tested under possible maximum operating conditions, with conveyor carrying maximum load. Conveyor shall stop; start and reverse without slipping or overload and maintain constant speed in either direction.

### 13. GUARANTEE

Mechanical conveyor system furnished under these specifications shall be guaranteed for period of one (1) year from date of final acceptance thereof against defective materials, design, and workmanship. Upon receipt of notice from Architect of failure of any part of the guaranteed equipment during the guaranty period, the affected part or parts shall be replaced promptly by and at expense of Contractor.